TIMEWAVE TECHNOLOGY INC.

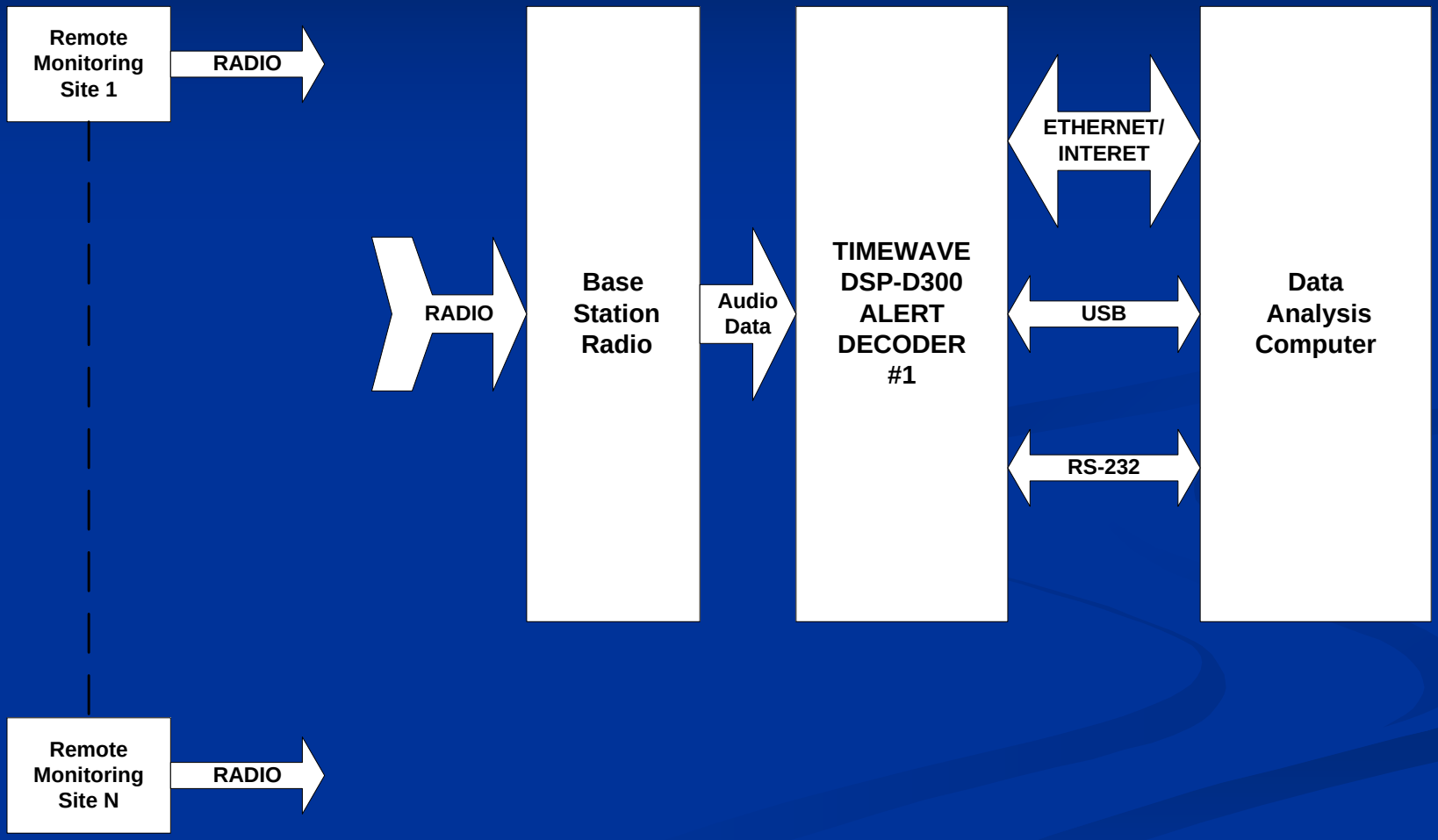
Communications & Measurement

Randall Gawtry

DSP-D300

ALERT/IFLOWS Decoder

Typical IFLOWS System

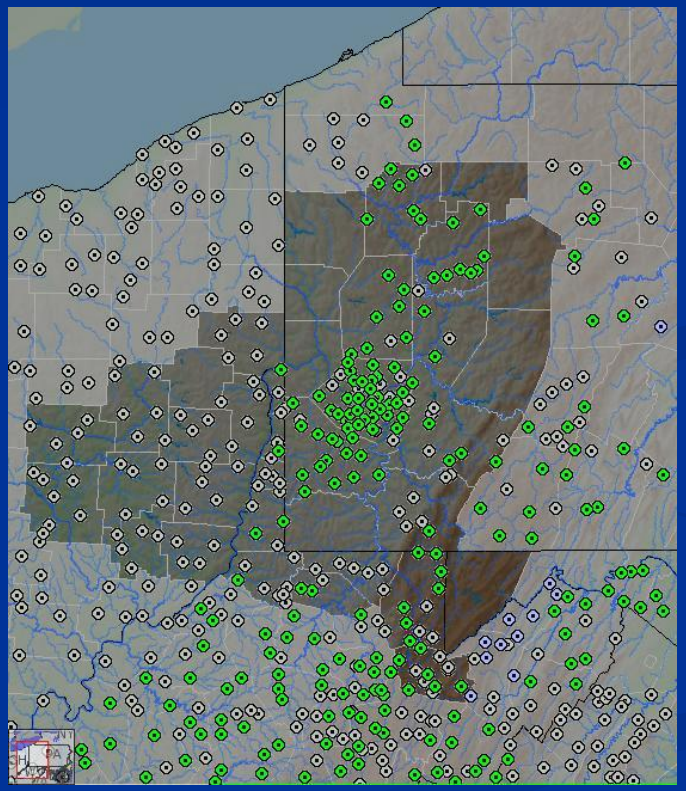


Automated Flood Warning System

- 12 States in an IFLOWS network
- Part of AFWS

afws.net Example

- Pittsburgh Area - click on a dot to see local data



How it works -

- ~ 100 Timewave DSP-D300E decoders listen to 1000+ gauges in 12 states in the Eastern U.S.A.
- DSP-D300E decodes the telemetry data from each gauge and sends it via internet to the local authorities and the NWS computers in Maryland
- AFWS computers process the data and display it on the internet at afws.net

Stand-alone operation

- No on-site computer necessary
- No hard drives, fans or other mechanical parts to wear out
- 2 watts (typical laptop uses 60 – 90 watts)

Internet Enabled

- Lower cost than satellite or microwave
- Remote data retrieval & control
- Remote Firmware update
- Secure – SSH meets Federal guidelines

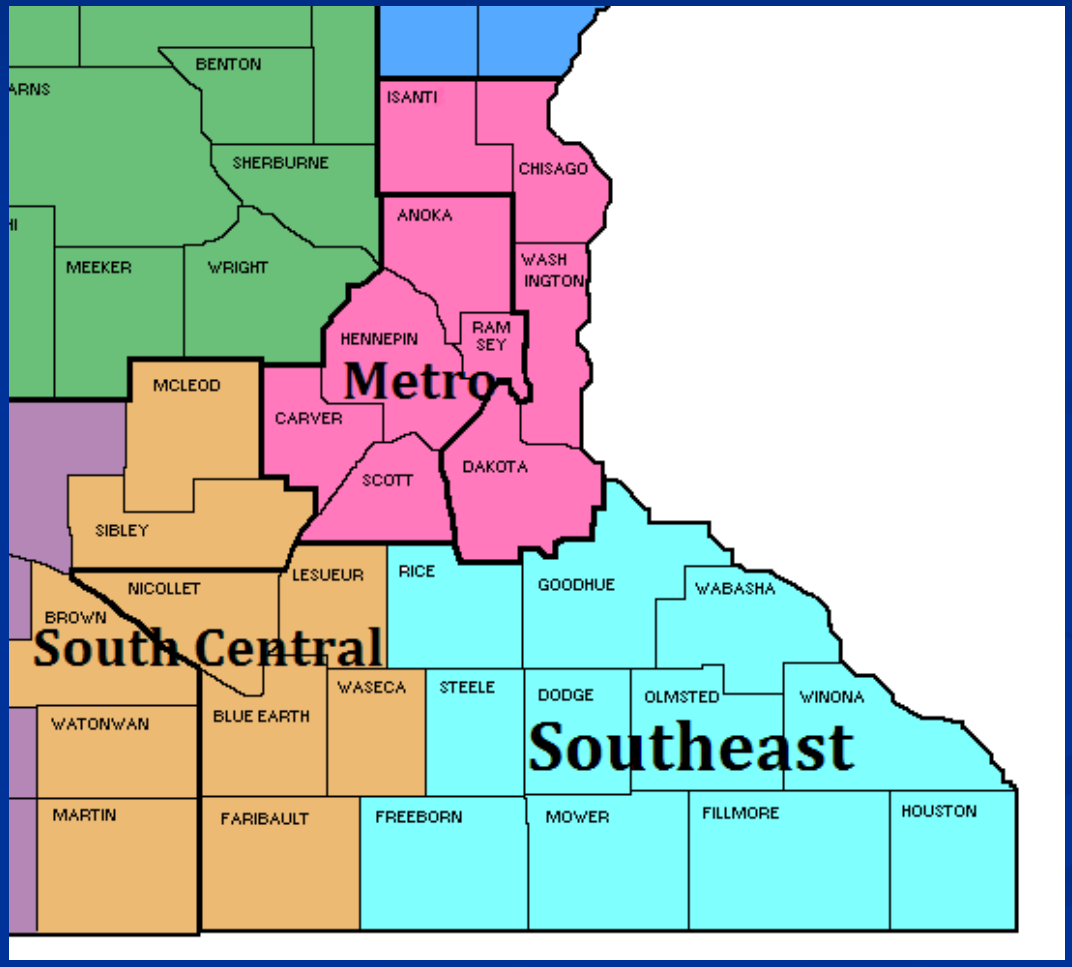
Digital Signal Processing

- Optimized Decoding of Noisy Radio Signals
- Encodes & Decodes ALERT/IFLOWS data
- Upgradeable to new ALERT protocol

Radio Tower Resources

- Use Public Safety Services Radio Towers
- Minnesota has extensive network
- MN will have 300+ towers by 2013
- Other states tower resources vary widely
- Check with your City/County/State EmComm
- MN contact info at Timewave Display

Minnesota Radio Districts



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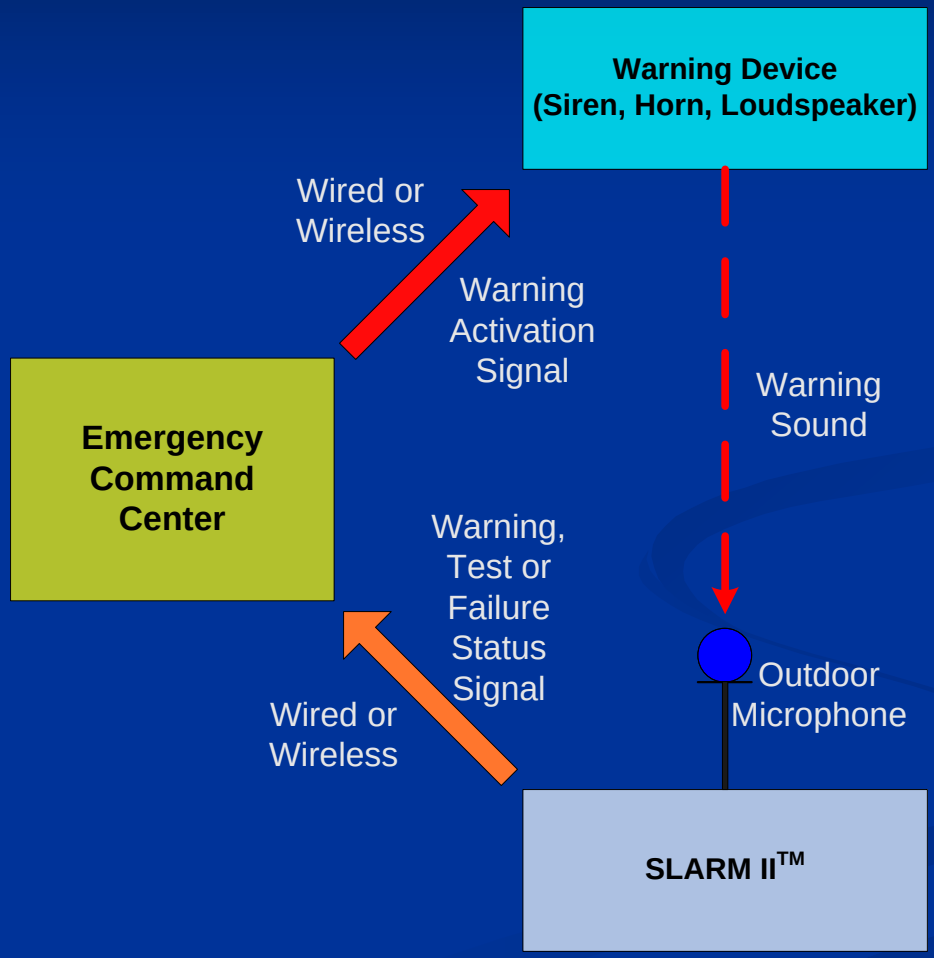
SLARM II

Acoustical Monitor & Failure Detector for Community Warning Systems

Monitored Warning System



Community Warning Devices

- Fixed location
- Mobile
- All can be dangerously loud!!

Community Warning Devices

- Fixed location
- Motor Driven
  - Tones 110 – 135 dB
- Loudspeakers
  - Warning signal
  - Voice announcement

Community Warning Devices

- Mobile
- Sirens & Loudspeakers
- Police Cars
- Ambulance
- Fire trucks

Community Warning Devices

Speech Intelligibility

- Never 100%
- Reduced by Noise
- Hearing loss

Environmental Effects

- Noise masking
  - Wind
  - Music
  - Motor vehicle traffic
  - Aircraft
  - Public event noise
  - Numerous other noise sources

Enclosures

- Enclosures ~ 30-50 dB attenuation!
- Public building
- Home
- Vehicle
- Headphones

Effective Use of Sirens & Loudspeakers

- Don’t expect total coverage !
  - Primary outdoor warning device
  - Limited indoor warning device
- Test and monitor their operation!